

CLAIMS

1. An automatic gate (1) for permitting or preventing access by a person to a space or a transport vehicle, in particular to a boarding lounge or an aeroplane, comprising at least one vertical and elongated frame (2), at least one flap (3) which is mobile between a closed position in which this flap forms a barrier preventing the passage of a person along the frame and an open position in which the flap allows this passage, means for reading an access ticket, in particular a ticket or an access card, means for controlling the displacement of the flap (3) between the two abovementioned positions, a lateral face of the frame (2) adjacent to the passage of the person comprising at least two superposed rows of detection cells (C1 - C33) cooperating with means for preventing the opening of the flap (3) or for maintaining the flap closed when these cells detect an abnormal situation, one of the rows, called high or upper row, extending to both sides of the flap (3) above a line (L) situated at the mid-height of the frame and the other row called middle, being situated close to this line.

2. Automatic gate according to claim 1, characterized in that it comprises moreover a third row, called low, of at least one cell situated below line (L).

3. Automatic gate (1) according to one of claims 1 or 2 for permitting or preventing access by a person to a space or a transport vehicle, in particular to a boarding lounge or an aeroplane, comprising at least one vertical and elongated frame (2) constituting a closed box, the gate (1) comprising, at least one flap (3) which is mobile between a closed position in which this flap (3) forms a barrier preventing the passage of a person along the frame and an open position in which the flap allows this passage, the end upstream of the frame (2) relative to the person's direction of movement, comprising an input

slot (4) for an access ticket and the end downstream of the frame (2) comprising an output slot (5) for this ticket, the frame (2) including means for controlling the displacement of the flap (3) between the two abovementioned positions, a route (6) for displacement of the ticket between said input slot (4) and said output slot (5) for the ticket and means for reading the ticket, characterized in that it comprises means for preventing the person from accessing the output slot (5) in order to remove the ticket, when the flap (3) is in the position preventing the passage of the person.

4. Automatic gate according to claim 3, characterized in that the distance (d) between the flap (3) and the output (5) of the ticket is such that when the flap (3) is in the position preventing the passage of a person, the latter cannot access said ticket output (5) in order to remove the ticket.

5. Automatic gate according to one of claims 1 to 4, characterized in that the flap (3) is integral with the frame. (2).

6. Automatic gate according to claim 1 to 5, characterized in that the flap (3) is mounted in rotation about an approximately horizontal axis (X-X') extending in the direction of the length of the frame (2).

7. Automatic gate according to one of claims 1 to 6, characterized in that in the position preventing the passage of the person, the flap (3) has a part projecting out of the frame (2) having the shape of a sector of a circle, the circular edge (3a) of this sector being directed upwards.

8. Automatic gate according to one of claims 1 to 7, characterized in that the means for controlling the displacement of the flap (3) are constituted by the reading of a valid ticket, allowing the displacement of said flap.

9. Automatic gate according to one of claims 1 to 8, characterized in that said cells comprise at least three groups of cells, each of these groups being assigned to different detection functions.

5 10. Automatic gate according to claim 9, characterized in that a first group of cells is assigned to a detection function ensuring the person's safety, a second group of cells is assigned to a detection function in order to allow counting of the persons and a third group is assigned to a function of detection of non-authorized and/or fraudulent passages.

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11. Automatic gate according to one of claims 8 or 10, characterized in that at least one cell can belong simultaneously to two groups of cells in order to perform different functions depending on the group of cells to which said cell is assigned.

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12. Automatic gate according to one of claims 1 to 11, characterized in that the cells in the upper row comprised between the frame (2) entry end (4) and the flap (3) are suitable for detecting the entry of an adult and optionally of two or more persons in close proximity.

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13. Automatic gate according to one of claims 1 to 12, characterized in that the cells in the middle row comprised between the flap (3) and the frame (2) exit end are suitable for detecting the exit of a person after the opening of the flap (3).

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14. Automatic gate according to one of claims 1 to 13, characterized in that the cells in the lower row comprised between the frame (2) entry end (4) and the flap (3) are suitable for detecting the entry of a child.

15. Automatic gate according to one of claims 1 to 14, characterized in that the detection of an adult pulling a trolley is carried out by the combination of at least one covered cell in the upper row simultaneously with the covering of at least two covered cells in the lower row, separated by a non-covered cell.

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16. Automatic gate according to one of claims 1 to 15, characterized in that the cells situated close to the flap (3) are assigned to the safety of the person vis-à-vis the ill-timed closing of the flap.

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17. Automatic gate according to one of claims 1 to 16, characterized in that the cells in the upper or middle rows, situated downstream of the flap are suitable for detecting the passage of a person or of a child from downstream to upstream of the gate and for controlling the closing of the flap in order to prevent said person from turning back.

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18. Automatic gate according to one of claims 1 to 17, characterized in that the frame (2) contains a microcomputer (8) suitable for receiving information from an external central control station (9), a reader (10) for the ticket introduced into the input slot (4) of the frame (2), cells for detection and in order to control, via an automaton (11) and a frequency variator (12), the operation of an electric motor (13) for displacing the flap (3) towards the opening or closing positions.

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19. Automatic gate according to one of claims 1 to 18, characterized in that the ticket has a magnetic strip (15), the frame (2) comprising means for reading this magnetic strip (15) capable of reading the latter, whatever the position in which the ticket is introduced into said input.

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20. Automatic gate according to one of claims 1 to 19, characterized in that the frame (2) also comprises close to the ticket output (5), a module (20) for cutting the ticket and detaching from the latter a coupon (21) intended to be taken by the person, and a store (50, 51) for recovering the remaining part
5 of the ticket.

21. Automatic gate according to claim 20, characterized in that the frame (2) comprises between the displacement route (6) of the ticket and the module (20) for cutting the ticket, a module (24) for turning the latter over.
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22. Automatic gate according to one of claims 1 to 21, characterized in that the frame (2) contains a printer for printing a second ticket different from the ticket read by the reading means, this printer being controlled as a function of the data read by a reader and information received from an
15 external control station (9).

23. Automatic gate according to one of claims 1 to 22, characterized in that the frame (2) comprises a second flap mounted in pivoting fashion inside the frame, close to the first flap (3), on an axis (X-X') shared with the latter,
20 this flap projecting in the closed position, from the face of the frame (2) opposite to that from which the first flap (3) projects when it is in the closed position.

24. Automatic gate according to one of claims 1 to 23, characterized in
25 that the gate comprises a second frame (2c) parallel to the first and delimiting the passage, said second frame comprises a second flap (3b) cooperating with the first flap, the opening of the first and second flaps being controlled by the reading of a valid ticket and the means associated with the opening of the passage.

25. Automatic gate according to one of claims 1 to 24, characterized in that it comprises a sound or visual signal associated with each normal or abnormal passage situation.

5 26. Automatic gate according to one of claims 1 to 25, characterized in that it has a symmetrical architecture suitable for allowing passage either in one direction, or in the opposite direction.

10 27. Gate according to one of the preceding claims, characterized in that the high row comprises at least six cells (H1-H6) upstream of the flap.

28. Gate according to one of the preceding claims, characterized in that the high row comprises at least six cells (H7-H12) downstream of the flap.

15 29. Gate according to one of the preceding claims, characterized in that the middle row comprises at least six cells (M1-M6) upstream of the flap.

20 30. Gate according to one of the preceding claims, characterized in that the middle row comprises at least three cells (M7-M9) downstream of the flap.

31. Gate according to claim 30, characterized in that the middle row comprises at least six cells (M7-M12) downstream of the flap.

25 32. Gate according to one of claims 29 to 31, characterized in that each cell of the middle row is arranged under a cell of the high row.

33. Gate according to one of claims 2 to 32, characterized in that the low row comprises a cell immediately downstream of the flap.

5 34. Gate according to one of claims 2 to 32, characterized in that the low row comprises two cells immediately upstream of the flap.

35. Gate according to one of claims 33 or 34, characterized in that each cell of the low row is arranged under a cell of the middle row.

10 36. Gate according to one of the preceding claims, characterized in that it comprises another flap arranged downstream of the flap, so that a high cell and/or a middle cell is located between the two flaps.

15 37. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that the presence of an adult is determined by the simultaneous covering of a cell of the high row and a cell of the middle row superposed on said cell of the high row.

20 38. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that the presence of a child is determined by the covering of a cell of the middle row without a cell of the high row, superposed on said cell of the middle row being covered.

25 39. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that a fraud by crawling is determined when only one of the cells of the low row is covered.

40. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that a fraud and/or an intrusion is detected when a number of consecutive cells, in the same row covered simultaneously, is greater than a given number.

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41. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that the entry of a person into the gate is determined when the most upstream middle cell (M1), and most upstream high cell (H1) in the case of an adult, is covered at the same time as the following two cells (M2, M3) (H2 and H3 respectively) are uncovered and that then the cells of the following columns (M2 then M3 and H2 then H3 respectively) are successively covered and that finally those of the two first columns (M1 then M2 and H1 then H2 respectively) are successively uncovered.

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42. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that the gate comprises an almost ready state, allowing the advanced reading of an access ticket.

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43. Method of controlling access according to the preceding claim, characterized in that if the gate is not ready after a given time, and an access ticket has been introduced via the ticket input slot, the ticket is returned by said ticket input slot.

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44. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that if after a given time following an authorization of clearing the gate, the flap or flaps have not been cleared, the authorization is cancelled and the flaps closed.

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45. Method of controlling access according to the preceding claim, characterized in that moreover if an access ticket has been introduced via a ticket input slot, the ticket is returned by said ticket input slot.

46. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that when an intrusion and/or when a fraud is detected, if the flap or flaps are open, they receive a command to close and/or a message is sent to a host system.

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47. Method of controlling access for an automatic gate according to the preceding claim, characterized in that, following the intrusion, the flap or flaps are reopened only after a given time.

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48. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that when an intrusion or a fraud is detected, it is signaled by a sound signal and/or a light signal which signals that access to the gate is forbidden.

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49. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that it comprises an evacuation mode, which can be activated locally, in which the gate is held open in order to allow free circulation.

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50. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that it comprises a normally open mode in which the flap is open and unenergized and closes in case of intrusion and/or fraud.

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51. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that it comprises a normally closed mode in which the flap is closed and unenergized and opens in case of authorized passage.

52. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that a zone of cells to both sides of the flap allows validation of their clearing by a person.

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53. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that a zone of cells for counting is composed of three successive columns of cells, each column of cells being successively covered then successively uncovered before validation of a passage.

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54. Method of controlling access for an automatic gate according to one of claims 1 to 36, characterized in that a delay time exists which is engaged after at least certain of the clearing stages of the gate, an anomaly being detected if a following clearing stage of the gate has not occurred during this delay time.

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55. Method of controlling access for a automatic gate according to claim 54, characterized in that a delay time exists for the entry of a person into the gate after an authorization has been given to him.

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56. Method of controlling access for an automatic gate according to claim 54, characterized in that a delay time exists for clearing the flap or flaps by an authorized person after he has entered into the gate entry zone.

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57. Method of controlling access for an automatic gate according to claim 54, characterized in that a delay time exists for a person to leave the exit zone, after having cleared the flaps.